

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Integrated Electronic Assembly (IEA), Aft (Logic and Networks Distributor and OF Signal Conditioner)

PART NO.: 10400-0328

FM CODE: A15

ITEM CODE: 50-01-01-03

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-59

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Parvathaneni

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FAILURE MODE AND CAUSES: Loss of three of four pitch or yaw outputs from RGAs 1, 2, 3 or 4 caused by:

- o Wiring harnesses, open or shorted

FAILURE EFFECT SUMMARY: Loss of vehicle rate detection leads to flight instability resulting in loss of mission, vehicle and crew. Two success paths remain after the first failure. Operation is not affected until three paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - RGA rate measurements B79R1410C through B79R1413C and B79R2410C through B79R2413C.
- 2) Pass - RGA rate measurements V95R4260C through V95R4263C and V95R4270C through V95R4273C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix B, Section 1, Paragraph (s) C & K

2. Component Description

See Appendix B, Section 2, Paragraph (s) E(2)(3)

B. TESTING

1) VENDOR RELATED:

See Appendix B, Section 3, Paragraph(s) A(3), B

2) KSC RELATED:

See Appendix B, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Aft Skirt Assembly Checkout (ACO) - The Aft IEA RGA output (through circuit) wiring is verified per 10REQ-0021, para. 2.2.2.7.6. (Wiring Harnesses)

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Prelaunch Test -

Shuttle Interface Test (SIT) - The RGA redundancy is verified per OMRSD File II, Vol. 1, Requirement Number S00000.640, S00000.643 and S00000.645. (All Failure Causes)

Terminal Countdown Demonstration Test (TCDT) - The SRB RGA redundancy is verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.215 and S00FF0.230. (Wiring Harness)

Launch Countdown - The SRB RGA redundancy is verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.215 and S00FF0.230. (Wiring Harness)

Last Test of Failure Mode Prior to Launch - Launch Countdown verification per OMRSD File II, Vol. 1, Requirement Number S00FF0.215 and S00FF0.230 verifies SRB RGA redundancy. (Wiring Harness)

C. INSPECTION

1) VENDOR RELATED:

See Appendix B, Section 4, Paragraph(s) A, E

2) KSC RELATED:

See Appendix B, Section 5, Paragraph(s) A.(1).(2)(h),B.(1)(b)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.

F. WAIVERS/DARS

See Appendix E, Paragraphs 2, 5, 7-15.